REMARKS/ARGUMENTS

Applicant appreciates the Examiner's thorough search with respect to the present patent application.

Claims 1-39 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barrus et al. ("Barrus," U.S. Patent No. 6,058,397) in view of Mitchell et al. ("Mitchell," U.S. Patent No. 6,349,301). Applicant respectfully traverses this rejection.

Applicant's claim 1 is directed to a system to "interactively access and analyze temporal relationships that change over time," and includes "one or more 4D portal storage mediums," "one or more 4D browser programs," and "one or more 4D portal windows." The 4D portal storage medium(s) contain "4D portal information." Further, the 4D browser program(s) are adapted to "convert 4D portal information into one or more 4D objects rendered in a 3D scene." The 4D browser programs are "adapted to manipulate the 4D objects in three spatial dimensions and a fourth time dimension...to enable the temporal and spatial manifestation of the 4D objects in the 3D scene." The 4D portal window(s), as recited in claim 1, are "adapted to receive and display the 4D objects in the 3D scene." Applicant respectfully submits that neither Barrus nor Mitchell teach or suggest the features above, either alone or in combination with each other.

Barrus is cited by the Examiner for disclosing all of the elements of applicant's independent claim, except that Barrus fails to disclose a portal. More particularly, Barrus is cited as disclosing the "creation of a 3D environment which is created and modified as records in a database (i.e., storage medium)" that includes "a creation and modification date [of object primitives that] constitute time." Barrus is further cited for disclosing the "exchange of information between a browser and a server," and for disclosing "transformations (i.e., manipulations) of the object in a locale coordinate system."

The Examiner cites to Mitchell for disclosing a portal. The Examiner states that Mitchell discloses a portal "as a doorway that links rooms and enables object movement between the rooms." The Examiner further cites Mitchell for disclosing "n local databases, in effect storage mediums, which each contain a portion of the virtual world environment which incorporate three dimensional objects maintained with a database with the least graphics, video, texts and sounds." The Examiner concludes that it would have been obvious to one skilled in the art at the time of the invention to "include in the creation and modifications of the virtual environment created by

Barrus, the portal information disclosed in Mitchell to allow a user to manipulate objects through movement and portals [that] are used in virtual worlds to link movement locations and the updating of the client database with all of the information to portray objects represented in the new location." Applicant respectfully disagrees.

Applicant respectfully submits Barrus does not teach or suggest "4D portal information" of applicant's claim 1. The "4D portal information" of claim 1 comprises complex, dynamic relationships between 4D objects and their attributes in the "combined temporal-spatial domain," extracted from large information databanks (see applicant's written specification, page 1, lines 25-30 and page 3, line 25 – page 4, line 6). Barrus, in contrast, discloses the creation of a 3D environment combined with a time stamp, such as a creation and/or modification date that is commonly used for version control. Barrus' 3D environment includes a database that comprises records, each defined as a geometric piece of a 3D model (see Barrus, column 2, line 50). Applicant respectfully submits that the "4D portal information" of claim1, unlike the teachings of Barrus, provides the ability to visually access and analyze complex temporal data relationships, extracted from information databanks that change over time. Applicant respectfully submits that claim 1 is directed to a system that uses "4D portal information" to "interactively access and analyze temporal data relationships that change over time" (see applicant's written specification, page 5, lines 1-6). Such a system is not taught or suggested by Barrus' 3D authoring and delivery system.

Applicant further submits that Barrus does not teach or suggest a "4D browser program" that "converts the 4D portal information into one or more 4D objects rendered in a 3D scene." Further, applicant's 4D browser program of claim 1 manipulates "4D objects in three spatial dimensions and a fourth time dimension." Instead, Barrus discloses the use of a version date (i.e. time stamp) by a server to determine a particular requested 3D model version which is delivered to and displayed by the browser. A time stamp denotes a discrete point in time; it is not a time dimension which supports continuous time values, time direction and time speed, for example. In Barrus, time is not a full dimension, only a time stamp used only by Barrus' server as a lookup attribute for version control. Barrus's 3D model transformations are defined by the 3D author indicating only an initial (i.e. "rest") position that is stored in a database (see applicant's written specification, p. 32, line 32 – page 33, line 19, and applicant's figure 4) (see also, Barrus, column 16, lines 17-39 and Figs. 14).

Applicant respectfully submits that Mitchell's definition of a portal as a "doorway" that links rooms together and enables the movement of objects there-between (column 5, lines 22-26) is distinct from that of applicant's claim 1. Mitchell defines a room as an object that defines a discrete region of the virtual (3D) world where all potential perception between other objects disposed in that region is contained (see column 5, lines 3-5). Applicant respectfully directs the Examiner's attention to applicant's written specification, page 5, lines 26-31, wherein Applicant's use of the term "portal" comprises a view into four dimensional information databases, for example "to build 4D portals into information databanks." Further, the "4D portal information" of claim 1, like a time tunnel, provides temporally continuous support for the user to visually travel back and forth in time (see, for example, page 15, lines 15-18), which is unlike Mitchell's portal.

Applicant respectfully submits that the combination of Barrus' virtual environment and Mitchell's portal does not teach or suggest applicant's claim 1, in which the "4D browser program manipulates...4D objects in three spatial dimensions and a fourth time dimension according to the 4D portal information." Instead, Barrus and/or Mitchell disclose a user who manually manipulates 3D objects at discrete points in advancing time.

Accordingly, applicant respectfully submits that Mitchell's portal, like Barrus' locale (see Barrus column 14, lines 45-46) connects two divided portions of the virtual world, and is unlike applicant's claim 1. Mitchell's static portal does not manipulate objects. Doorways can not move or manipulate anything. Mitchell's portal enables motion between discrete regions of the 3D environment, but moves nothing. Mitchell's portal is used to change a user's perspective from one room to another, encapsulating all the objects within the user's new locale. Therefore, applicant respectfully submits that Mitchell does not teach or suggest "4D portal information," as recited in applicant's claim 1, and, therefore, does not provide an element of applicant's claim 1 that is missing from the teachings of Barrus. Therefore, even assuming, *arguendo*, that one were to combine the teachings of Mitchell and Barrus, applicant's claim 1 is not rendered obvious because the combined teachings of Mitchell and Barrus do not provide the above-identified elements of applicant's claim 1, including "one or more 4D browser programs adapted ... to manipulate 4D objects ... to enable temporal and spatial manifestation of the 4D objects in a 3D scene," as recited in applicant's claim 1.

For the reasons set forth above, applicant respectfully submits that independent claim 1 is patentable over the references cited.

Claims 2-31 are patentable for the same reasons, as well as because the combination of features set forth in those claims with the claim(s) from which they depend.

Independent claim 32 is directed to a method for "generating a temporally and spatially manipulatable 4D portal from one or more information databases" in which "one or more 4D objects in a 3D scene" is created based on "4D object definitions." Applicant respectfully submits that, as noted above with respect to 4D portal information, "4D objects" include a fourth dimension (time) that is not defined in the three dimensions of a 3D environment.

As noted above with respect to claim 1, the Examiner cites to the combined teachings of Barrus and Mitchell as rendering obvious claim 32, and concludes it would have been obvious to one of ordinary skill in the art at the time of the invention to "include in the creation and modifications of the virtual environment created by Barrus, the portal information disclosed in Mitchell to manipulate objects through movement and portals [that] are used in virtual worlds to link movement locations and the updating of the client database with all the information to portray objects represented in a new location." Applicant respectfully disagrees.

Applicant respectfully submits that the combination of Barrus' virtual environment and Mitchell's portal does not teach or suggest the features of applicant's claim 32. Instead, Barrus and/or Mitchell teach 3D virtual environments that are created by a 3D author and manipulated manually by the author/user.

Applicant further submits that Barrus does not teach or suggest "organizing 4D object types and spatial manifestations into a set of 4D object definitions," as recited in claim 32. Instead, Barrus teaches the use of a 3D model in conjunction with a time stamp for version control, and that 3D models are created and positioned by a 3D author. A time-stamped 3D model differs significantly from identifying and "organizing 4D object types and spatial manifestations into a set of 4D object definitions, creating a 3D visual model for each 4D object type, and creating one or more 4D objects in a 3D scene based on the 4D object types." Applicant respectfully maintains that Barrus does not teach or suggest a method that generates 4D objects from "information databases," nor does Barrus teach or suggest a method to define "spatial manifestations for each 4D object." Furthermore, applicant submits that Barrus teaches a database that corresponds to a static 3D scene (see Fig. 13), with no fourth time dimension and

only different versions defined by the 3D author. Thus, applicant respectfully submits that Barrus does not teach or suggest generating a "temporally and spatially manipulatable 4D portal," as recited in claim 32.

As noted above, Mitchell's portal connects two divided portions of a virtual world. Applicant respectfully submits that applicant's claim 32 is distinct in which a user is provided a view into a virtual world manifested according to the underlying temporal dataset. Therefore, applicant respectfully submits that Mitchell does not provide the necessary elements of claim 32 that are neither taught nor suggested by Barrus. Even assuming, *arguendo*, that one were to combine the teachings of Barrus and Mitchell, applicant's claim 32 is not rendered obvious. More particularly, the combined teachings of Mitchell and Barrus do not show a method for "generating a temporally and spatially manipulatable 4D portal from one or more information databases." Therefore, applicant respectfully submits that claim 32 is patentable over the combination of Barrus and Mitchell.

Claims 33-39 are patentable for the same reasons, as well as because of the combination of features set forth in those claims with the claim(s) from which they depend.

For the foregoing reasons, applicant respectfully submits that the application is in condition for allowance, for which action is earnestly requested.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, on January 6, 2004:

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Name of applicant, assignee or Registered Representative

Signature

January 6, 2004

Date of Signature

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Respectfully submitted,

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